



THYROID HORMONE AND PREGNANCY

Transient hypothyroxinemia may affect brain development in preterm infants

WHAT IS THE STUDY ABOUT?

Thyroid hormone is very important for normal brain development. During the third trimester of pregnancy, the baby gets thyroid hormone from the mother as well as its' own thyroid. When a baby is born prematurely, thyroid hormone levels are frequently lower than normal for a period of time then increase back to the normal range (transient hypothyroxinemia). It is unclear whether the effect of this period of low thyroid hormone levels has any effect on the baby's brain development. This study was done to correlate the thyroid hormone levels in babies with transient hypothyroxinemia with brain development at the age of 5 years to determine if there were any abnormalities.

THE FULL ARTICLE TITLE:

Delahunty C et al. Levels of neonatal thyroid hormone in preterm infants and neurodevelopmental outcome at 5½ years: Millennium Cohort Study. *J Clin Endocrinol Metab* 2010. jc.2010-0743 [pii];10.1210/jc.2010-0743 [doi]

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to correlate the thyroid hormone levels in babies with transient hypothyroxinemia with brain development at the age of 5 years to determine if there were any abnormalities.

WHO WAS STUDIED?

The study group included 178 preterm infants age <34 weeks old and 100 full term infants >37 weeks old.

HOW WAS THE STUDY DONE?

In the hospital, thyroid hormone levels were assessed on day 7, 14 or 28 by using the serum thyroxine (T₄) level. Transient hypothyroxinemia was defined by a level of T₄ <10th percentile. The children were examined using specific tests (McCarthy Scale) and three psychologists were trained in the use of these scales and administered them on a regular basis over approximately 5 ½ years.

WHAT WERE THE RESULTS OF THE STUDY?

For all tests, a significantly higher proportion of infants with hypothyroxinemia as compared with normal

infants scored in the bottom 5% of values. Infants with hypothyroxinemia had significantly lower testing scores in verbal skills and in general brain developmental scores.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

Other studies have found that having severe hypothyroxinemia in preterm infants can cause problems in brain development at a later age. There are conflicting studies as to the benefit of treating infants with thyroid hormone.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that it is important to identify transient hypothyroxinemia in all infants because it can have significant long term effects on the child. Whether or not this should be treated with thyroid hormone is unclear and will require further clinical trials.

— Heather Hofflich, MD

ATA THYROID BROCHURE LINKS

Thyroid Function Tests: http://thyroid.org/patients/patient_brochures/function_tests.html

Hypothyroidism: http://thyroid.org/patients/patient_brochures/hypothyroidism.html

ABBREVIATIONS & DEFINITIONS

Thyroxine (T₄) — the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones.

Transient hypothyroxinemia — temporary decrease in the blood level of thyroxine (T₄) after delivery in pre-term infants, followed by the return of normal levels in the absence of any treatment.